

LITERATURE SURVEY

Survey Paper:1

Paper Name: Automated Aeroponics System for Indoor Farming using Arduino

Author Name: Ferdousi Rahman, Israt Jahan Ritun, Md.Ryad Ahmed Biplob, Nafisa Farhin, Jia Uddin.

Aeroponics is the modern agricultural conception in which the plants are grown without soil using a nutrient solution sprayed in the roots and is more efficient than traditional farming. The longstanding farming techniques are mostly dependent on the soil conditions and outer atmosphere, but using this technology, the cultivation process is more resourceful with better control system and data monitoring as well as convenient for general urban indoors. The proposed system states easily available and user friendly components, allowing people to reproduce and modify without needing advanced technological skills and tools.

Reference:

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- [2] Aeroponics. [online]. <https://www.maximumyield.com/definition/137/aeroponics>
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- [4] AeroFarms [online]. <http://aerofarms.com/technology> (Accessed 18 Nov, 2017).

Survey Paper:2

Paper Name: IOT-Based Automated Aeroponics System

Author Name: Felin Francis, P. L. Vishnu, Manish Jha and Bharghava Rajaram

Aeroponics is a soilless method of growing plants in air with the assistance of water vapor or mist environment, using an enriched nutrient solution sprayed as a mist, in order to attain faster plant growth. One of the key ideas behind aeroponics is to keep the growth environment pest- and disease-free, so that the plants can grow faster and healthier. In this , we propose an automated aeroponics system in which we use sensors for measuring the temperature, humidity, pH value of water, and the light exposure in the environment where plants are grown.

Reference:

- [1]. Ahonen T, Virrankoski R, Elmusrati M (2008) Greenhouse monitoring with wireless sensor network. In: 2008 IEEE/ASME international conference on embedded systems and mechtronic and applications, Oct 2008. IEEE, pp 403–408
- [2]. NASA Spinoff in 2006, Innovative Partnership Program, Publications and Graphics Department NASA Center for Aerospace Information (CASI), 2006
- [3]. Hou J, Gao Y (2010) Greenhouse wireless sensor network monitoring system design based on solar energy. In: International conference on challenges in environmental science and computer engineering in 2010, vol 2. IEEE, pp 475–479
- [4]. Abdul-Rahman AI, Graves CA (2016) Internet of things application using Tethered MSP430 to Thingspeak cloud. In: 2016 IEEE symposium on service-oriented system engineering (SOSE), Oxford, 2016, pp 352–357

Survey Paper:3

Paper Name: Development and experiment of the intelligent control system for rhizosphere temperature of aeroponic lettuce via the Internet of Things

Author Name: Tarek Mahrous Korany Mohamed, Jianmin Gao , Mazhar Tunio.

Currently, in the conventional aeroponic system the collection of data for crop performance is quite slow, whereas such data are typically collected manually. Correspondingly, the root zone temperature is one of the most important factors affecting plant growth in aeroponics cultivation. This study aimed to obtain temperature and relative humidity data inside an aeroponic system based on the Internet of things (IoT) and automatically cool the root zone using a novel low-cost effective technique for cooling via a cooling fan connected to the Arduino board. The results revealed that the newly designed system could monitor and record the data in real-time on an internet server per hour. Furthermore, the temperature and humidity data can be displayed on the smartphone application, and be sent to the personal email weekly as an excel sheet.

REFERENCE:

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- [2] Asaduzzaman M, Saifullah M, Mollick A S, Hossain M M, Halim G M, Asao T. Influence of soilless culture substrate on improvement of yield and produce quality of horticultural crops. *Soilless culture-Use of substrates for the production of quality horticultural crops*. Intech, 2015; 25: 1–32. doi: 10.5772/5970.
- [3] Sakamoto M, Suzuki T. Effect of root-zone temperature on growth and quality of hydroponically grown red leaf lettuce (*Lactuca sativa* L. cv. Red Wave). *American Journal of Plant Science*, 2015; 6(14): 2350. doi: 10.4236/ajps.2015.614238.